Dworshak Fisheries Complex
Monthly Activity Report

U.S. Fish & Wildlife Service, Region 1

Volume 5 Issue 02

November Highlights

Dworshak

SST BY15 pre smolt - 2,335,074

SCS BY15 eggs - 3,236,156

SCS BY14 fry - 1,511,854

COS BY14 fry - 553,487

Kooskia

BY 14 Chinook fish on station 660,585

BY 15 Chinook eyed eggs on station 731,751

Inside this issue:

Managers Message - Steve Rogers

What is fish 'stress'? In fish culture terms, fish stress is the reaction (both internal and external) by the fish when we interact with them or change their environment. We can observe stress in the behavior of the fish, which is typically different than how they act in a comfortable, stable environment. Beyond our observation, fish have distinct, measurable physiological changes that occur when under stress.

As an example of stress in fish, a culturist may outplant some rainbow trout into a lake in early spring. As the fish leave the 54 ^{o}F well water they were held in on the tank truck and enter the 48 ^{o}F lake water, the culturist observes the rainbow swimming erratically on the lake surface, jumping and darting in all directions. This is unusual behavior, and is observed stress resulting from the drastic and immediate environmental temperature change. If these fish in this condition were examined physiologically, the examiner might detect an elevated heart rate or other physiological changes when compared to the same fish examined in a stable and agreeable environment. This is the stress we can't readily see but exists nonetheless. Later, after the fish adjusts to the new environment, its heart rate and other metabolic processes may return to a more homeostatic level. In this example, both environments (the tanker and the lake) are suitable to the fish. However, the sudden change from one to the other causes physiological and behavioral changes in response as the fish adapts. If the change is dire, it may even lead to fish death, resulting specifically from severe stress induced by the environmental change.

During this fish outplant, the rainbow trout were stressed in multiple and incremental ways. First, they were made uncomfortable when they were taken off of feed in advance of the release. Secondly, they were stressed more severely when they were 'crowded' at one end of the hatchery raceway to facilitate loading. The forced movement by a crowder would increase their stress levels, causing them to utilize more oxygen in the pond. Then in the high density environment after crowding, they would be stressed even further competing for limited oxygen and limited space. The presence of culturists tasked with loading the fish would add to their elevated stress. Moving the fish from one environment (the raceway) through a pump and into a crowded and unfamiliar new environment (the tanker) would continue to exacerbate the stress response; as would the long drive to the lake. Finally, the somewhat violent and immediate move from the tanker into the lake via fish-planting hose would further compound stress, as would the thermal shock mentioned earlier when they enter the lake. All of these factors and some I haven't mentioned would cause significant changes in the fish: stress.

Some stress in fish is healthy in their development, adaption, and survival. However, repeated or significant stress events lead to reduced immune function, as is the case in humans and other life forms. Reduced immune function can lead to susceptibility to disease. If stress is severe, it can even lead to death without the presence of disease or other causative agent.

Our ability to minimize stress in the hatchery environment is critical to meeting production objectives and releasing healthy, competitive smolts with the best chance to survive in the natural world. It is also the right thing to do, handling and growing our fish in an environment that is stable and comfortable. The example of the rainbow trout illustrates that each and every action we take, routine or otherwise, has a significant and lasting effect on the health and well-being of our fish.

Credit: Rick King and family

Dworshak NFH Production - Izbicki, Sommer, Bisbee

Dworshak Stock - Spring Chinook Salmon (SCS)

Brood Year 2015 (BY15)

Eggs from all 7 egg takes were enumerated in November. 2.85 million eggs were enumerated with 2.61 eyed eggs going into production. Enumerated eye up was 91.4%. 23 females were culled due from BKD (ELISA values 0.249 or more) and 20 females were culled for low eye up (>60% dead eggs). Fecundity was very high this year averaging 4,024 eggs per female. Eggs are being incubated on chilled water and will be ponded as swim up fry in April 2016.

Brood Year 2014 (BY14)

At the end of November there were 1,511,854 fry at 43 fpp. Mortality was 0.12%. There are 10 distinctive PBT groups ponded: 6 for the density study (3 high density and 3 low density), one for general Dworshak production, one for Selway production, one for Nez Perce Tribal Hatchery (NPTH) additional Lower Snake River Comp. Program (LSRCP) production, and excess fish production. Fish are slightly smaller than previous years but are still expected to make size.

Coho Salmon (COS)

Brood Year 2015 (BY 15)

Eggs from 78 Clearwater Coho females are currently in incubation. Additional eggs were transferred from Umatilla in November to supplement the Coho program. Eggs are being incubated on secondary water.

Brood Year 2014 (BY 14)

At the end of November there were 553,487 fry at 40 fpp being reared in six Burrow's ponds. Mortality remains very low at 0.05%.

Credit: Jill Olson FWS

Rick King was awarded the 2015 Chili Championship trophy!

Dworshak Stock- Summer Steelhead (SST)

Brood Year 2015 (BY 15)

There are currently no fish in the nursery. Cleaning and repairs will be on going until BY2016 SST are moved in.

At the end of November there were 2,335,074 fry in the BPs averaging 13.4 fish per pound. Mortality was 0.4%. Some Burrow's Ponds are experiencing higher than normal mortality. Low levels of ectoparasites have been found and fish health is testing for CWD. All takes are on schedule to meet size at release**.** All takes are on demand feeders and are on a maintenance diet.

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Dworshak Hatchery Headlines

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SUMMARY

Table 1. Total Production—Fish on Station (11/30/15).

SP	BY	Location	Number	Wt (lbs)	FPP	L in	L mm
SCS BY 15	15	Incubation/Eggs	3,236,156				
SCS BY14	14	Raceways	1,511,854	34,862	43	4.3	108
COS BY14	14	Raceways	553,487	13,819	40	4.2	105
SST BY15	15	Systems	2,335,074	169,833	14	6.0	153
Total Fish/Fry on Station EOM			**7,636,571**	**218,514**			

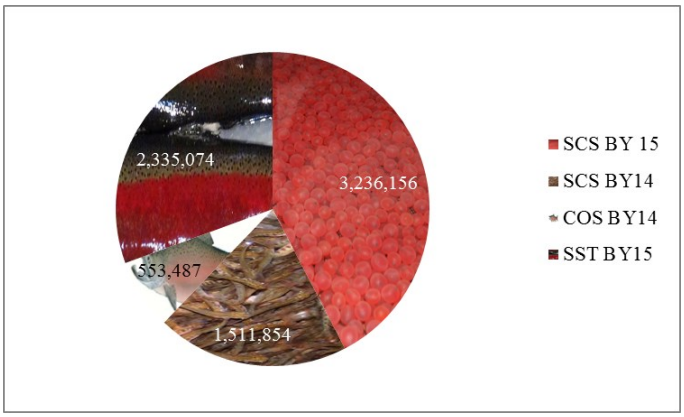

Figure 1. November 30, 2015 Total Fish/Eggs on Station.

Dworshak NFH Meetings, Training and Conferences: Nothing to Report.

2015 Combined Federal Campaign

The 2015 Combined Federal Campaign (CFC) kick off was held on November 5. The Complex raised funds for the CFC by hosting a Chili Feed. Employees cooked up their favorite chili recipes and the taste testing began. All participants donated $ 5.00 for an all you can eat lunch of chili and cornbread.

After everyone had a chance to sample the chili choices they voted for their favorite. Deserts were donated by staff and sold to satisfy those with a sweet tooth or two. A total of $225.00 was raised.

AND THE WINNER IS ??????????? Rick King is the 2015 Chili Champion!

Credit: File photo, FWS

Fun and learning with kids from the Early Childhood Development (Headstart) Program in Orofino, Idaho.

Dworshak Production M&E - Peery

Participated in the weekly Snake Basin Coordination calls and monthly Complex Project Leaders and RO Project Leaders meetings.

We processed steelhead collected this month as part of 2016 broodstock collection. We collected 743 (~9 fish/hr) steelhead of which 110 were retained for broodstock. The remaining fish were returned the river. 31% of these were 1-ocean fish. Eleven coho and 23 fall Chinook salmon were also collected for the NPT programs.

Chinook salmon were sampled as part of the density study.

Snorkel surveys were conducted in the Lochsa River as part of the whitefish study.

Participated in webinar for developing Strategic Work Plans. Coordinating developing work plans with other Complex project leaders.

Reviewed Idaho Supplementation Studies Final Report.

Working with Production staff to summarize information to be used in presentation for the Fish Culture conference to be held in December.

Working on Annual M&E Reports for steelhead program.

Completed developing summaries of Dworshak steelhead and Chinook salmon production and M& E programs for Clearwater River AOP call.

Attended Fish Culture Conference.

Developed forecast for 2016 Dworshak NFH Chinook salmon return. Information was sent to IDFG to be presented to TAC next week.

Finalized cost analysis, 2015 EPAPs, and 2016 EPAPs and IDPs for FRO staff.

Aquatic Conservation Team

Credit: Jill Olson, FWS

We collected 743 (~9 fish/hr) steelhead of which 110 were retained for broodstock.

M. Faler; Coordinated with IDFG's Fish Genetics Lab in preparation of sending tissue samples from Cascade Creek for DNA analysis.

Participated in the bi-monthly Aquatic Conservation Team conference calls

Participated in the monthly NW Refuges Climate Change Monitoring conference call.

Summarized E-fishing data for Myrtle and Cascade creeks and completed reporting for IDFG collection Permit.

Completed the NFPP "Featured Accomplishment Report" for the IFRO to be submitted for inclusion in the Annual Regional Fishery Resources Highlights Report.

J. Brostrom; attended the Redband Trout Conservation Team Meeting in Sacramento. (M. Faler phoned in to this meeting) Topics discussed included reviewing the draft Conservation Strategy, with plans to edit, incorporate GMU sections and finalize by June 2016. Dr. Helen Neville from Trout Unlimited gave a presentation on modeling population health and future status based on

Aquatic Conservation Team

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actual population sampling, habitat assessment via satellite photo analysis, and a few other attributes.

Model is being developed for Lahontan cutthroat trout, with plans to add other species over time. We also heard a presentation from researchers in Australia who are involving communities in restoring native fish populations after catastrophic wildfire has wiped out habitat and the communities. Ironically these species were decimated prior to wildfire by predation from introduced rainbow trout.

Reviewed Yellowstone Cutthroat Trout 5-year assessment.

Participated in the Bonneville Cutthroat Trout Interagency Annual Meeting via phone

Attended Lemhi Soil and Water Conservation District meeting to present a project for Partners for Fish and Wildlife Funding.

Developed proposals for 2016 FONs/Flex funding; Lamprey Conservation Initiative support. An integrated project to assess harvest, escapement and spawning success for Clearwater River steelhead, in partnership with IDFG and Nez Perce Tribe. Updated proposal to continue providing PIT tags to mark Kooskia NFH Chinook salmon production. Tagging this segment of production has been shared with IDFG in recent years. Coordinated with ID Panhandle NF biologists for submission of four Fish Passage proposals. Year two of the Burbot Thermal Tolerance Study. Two additional Fish Passage proposals for central Idaho and two for NFHAP (1 WNTI and 1 DFHP). Developed rankings for all FY16 proposals submitted.

Began working on Tier 1 Watershed Focus Area narratives for the Regional ACT Business Plan.

Attended the monthly Upper Salmon Basin Watershed Project Tech Team Meeting. Showed the video "Lost Fish" with some follow-up discussion about pacific lamprey.

Attended the Salmon School Garden Committee meeting. Met with Katie Cooper, supervisor of the the CPWN intern, on projects for the school garden.

Called in to the Restoration Webinar "Enhancing the resilience of riparian/wetland ecosystems in light of climate change."

Finalized FY16 EPAPs.

Snake River Fall Chinook Team

B. Connor; He worked on the re-analysis and write up of summer flow augmentation (a.k.a., Dworshak Drawdowns).

Coordinating analyses on passage abundance of natural-origin juvenile fall Chinook salmon at Lower Granite Dam.

Processed the resignation paperwork of one of the project biologists.

Experienced severe computer problems resulting in two days of lost work time. Randy Bowen reimaged the computer in a single day. Had it not been for Randy and on site assistance, more work time would have been lost.

The remainder of the fall Chinook salmon crew conducted deep water redd surveys on the Snake River.

Assisted the Nez Perce Tribe during radio-telemetry work on returning adults.

Idaho Fish Health Center - Blair

November 2015

Dworshak NFH

Steelhead juveniles: Chronic mortality occurred during the month in system 1 in several ponds. Low levels of external parasites were found, but no bacterial pathogens at this time. Viral results are still pending. Chronic mortality was also seen in two ponds in System 2, previously having issues with Flavobacterium psychrophilum. External parasites, Ichthyophthirius and Trichodina, were found in low levels, but no bacteria was detected in kidneys; viral results still pending also. Fish in both system 1 and 2 will be examined for residual Flavobacterium psychrophilum in the brain in Dec, since it was not isolated from the kidney.

Credit: Scott Koehler, FWS

Rob Kellar making standpipe repairs in welding shop, DNFH.

Spring Chinook juveniles: Monitoring exams of Dworshak SCS juveniles were conducted on November 24th for both high and low density groups for the Dworshak SCS density study. Fish from the high density group had low levels Gas Bubble Disease. No fish were detected positive for Renibacterium salmoninarum (Bacterial Kidney Disease) by the ELISA test. Flashing was observed in SCS juveniles from A5; no external parasites were observed on gills or in skin scrape, but Epitheliocystis was observed in skin mucus. Excess mucus and emboli in the gills was observed, indicating stress in these fish.

Coho juveniles: Monthly monitoring was conducted on November 24th. Mortality remains low. One of the six fish examined was moribund and the rest were collected from the general population of the pond. Three of the six had rocks in their stomachs. The moribund fish had several rocks in its stomach, likely causing it to be moribund. Samples were taken for bacteriology.

Coho Broodstock: Numbers of adult returns to Dworshak have remained low. There were three spawning takes at Dworshak in November with a total of 27 females spawned. The Nez Perce Tribe was able to get eggs from Coho returning to 3 Mile Dam in Oregon. Staff traveled to 3 Mile Dam on three different occasions to take samples from 135 females. These eggs were brought directly to Dworshak and placed in trays isolated from other eggs pending virology results.

Kooskia NFH

Spring Chinook juveniles: A monitoring exam of spring Chinook juveniles at Kooskia NFH was performed on November 23rd. Low levels of the blood fluke Sanguinicola as well as low levels of debris were seen on the gills. Low levels of Epitheliocystis were observed on the skin. Most fish had slightly pale livers and all fish had no food in stomachs most likely due to the cold water conditions. All fish examined were sampled for Renibacterium salmoninarum (Bacterial Kidney Disease) monitoring by the ELISA test.

DNFH Maintenance and Operations - Koehler November 2015

- On November 30th at about 10:30 pm, Clearwater power had a power cable that feeds Mechanical 1 fail. This caused our emergency generators to come on line. Generator 1 had a problem and would not provide voltage. At that point, our electrical department was able to switch over to generator #2 and spent the night babysitting our backup power and keeping an eye on incubation. Clearwater power spent all of the next day tracing out the problem and replacing 3 cables approx. 100 feet long. by 4:30 that afternoon all was back up and running normal. We are working with an outside generator tech. to troubleshoot and repair generator #1.

- Several standpipes from system 1 and 2 are in need of repairs and upgrades. We are working our way through these standpipes making necessary repairs.

- We are in the process of replacing the fill hose on our propane tank. The old hose had a serious leak and was a safety issue.

- Sound insulation has been installed in the ceilings of several offices in the main building. We will be installing new lighting in some of the areas that were insulated.

- System one biofilters were originally plumbed together and needed to be isolated. Maintenance has removed part of the piping and installed a blind flange to complete this separation.

- Both the Fish truck and boom truck have made the trip to Lewiston to be serviced and DOT inspected. Good for another year.

- A new formalin barrel cleaning station has been designed and installed behind Mechanical 2. This should require less contact with formalin for staff.

- Chiller pump motor couplings have been a problem but during the last failure, Rick King, maintenance mechanic, has found what we think was the problem and made the needed improvements.

- Maintenance is working on specifications for equipment that in scheduled for replacement.

The Maintenance Department has completed all 33 preventative maintenance work orders for the month of November. and also completed 18 hand written work order requests.

COE fish tankers in their new home, DNFH

Credit: Scott Koehler, FWS

Kooskia NFH - Hills

This activity report is implemented by the Tribal Fish Hatchery Manager, Kent Hills. All information in this report was collected and or performed by the hatchery staff during the preceding month.

Under SRBA and the Clearwater Annual Operating Plan, the Tribe, Service and Idaho Fish & Game have agreed to implement other fish production actions related to KNFH mitigation. Reports will include additional information about other species reared, processed and released in relation to KNFH operations.

Credit: KNFH

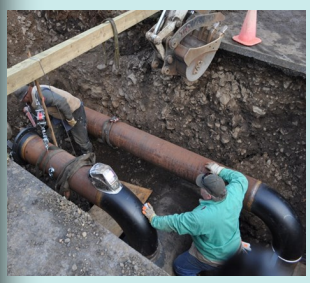
On November 2 Gateway Materials contractors began installation of he pipes for the circular tanks.

Kooskia Chinook Brood Year 2014

There are 660,585 fish on station, they are an average of 34.8 fish per pound and are 4.58 inches (116 mm). All fish are in the Burrows ponds on creek water at an average temperature of 38.5 degrees. Total mortality for the month was 50. The fish consumed 1,351 pounds of Bio-Vita feed. The Idaho Fish Health Center evaluation showed low levels of debris and Sanguinicola on the gills and low levels of Epitheliocystis on the skin.

Kooskia Chinook Brook Year 2015

There are 731,751 eyed eggs on station; they are on chilled well water at 37°F. All takes have been shocked, enumerated and picked once, 2nd pick is under way. The average fecundity was low this year we averaged 3,299 eggs per female. The fecundity in the first two takes was real low due to females not being fully ripe and the average eye-up was down to 85.1 percent this information can be seen in the table below.



Credit: KNFH

Kooskia Adult Trap Operations:

Trap was opened on the 6th of November to trap Coho.

Maintenance & Operations:

Nov 02: Gateway Materials contractors arrived and began installation of the pipes for the future circular tanks. Hatchery staff shocked take 4 of BY15.

Nov 03: Staff began enumerating take 4 of BY15.

Nov 04: Coho personnel removed the picket weir from Clear Creek.

Nov 6: Switched from well water to creek water on the burrows ponds, the chiller and bio-filter were turned off. The trap was opened to trap Coho.

Nov 12: Shocked take 6. Removed the Burrows Pond covers.

Nov 13: Enumerated take 6.

Nov 16: Insulated the new pipes for the circular tanks.

Nov 17: Staff worked on insulating the new pipes for the circular tanks.

Nov 19: The chiller on the incubation system was turned down to obtain 37° F water.

Nov 28: Covered the new pipes for the circular tanks with a skid-steer.

Credit: KNFH

Coho personnel removed the picket weir from Clear Creek on November 4.

Kooskia NFH - Hills

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KOOSKIA TAKE #	DATE REC	Number of Females spawned and sent to KNFH	Females culled for BKD	Females eggs culled poor quality	Females eggs enumerated	Estomated EGGS RECEIVED	GOOD EGGS TO DATE	Dad Eggs To Date	Total eggs per lot	Fecundity per female	Percent eye-up
1	8/11/15	5	0	0	5	18,820	7,882	3,505	11,387	2,277	69.2%
2	8/19/15	7	0	0	7	26,348	16,886	4,729	21,615	3,088	78.1%
3	8/25/15	20	2	3	15	75,280	43,324	13,951	57,275	3,818	75.6%
4	9/1/15	88	1	3	84	331,232	269,169	32,544	301,713	3,592	89.2%
5	9/8/15	136	5	9	122	511,904	381,235	70,355	451,590	3,321	84.4%
6	9/15/15	3	0	0	3	11,292	8,508	2,319	10,827	3,609	78.6%
		259	8	15		974,876	727,004	127,403	854,407	3,299	85.1%

Kooskia NFH Training and conferences:

Nov 09: Stratgic work plan meeting.

Nov 20: Art went to Dworshak for forklift training.

Information and Education

Dworshak - Jill Olson

Facebook: Reach - 2,291 Engagements - 351

Website: Page Views - 170; Unique Visits - 129; First Timers - 107; Returning - 22

Visitors: We had 59 visitors coming from 9 states.

Tours: No public tours.

Outreach: Jayson Thompson traveled to the Orofino Headstart Pre-school to interact with 24, 3-5 year olds. He answered their many questions and talked to them about salmon anatomy, egg development, and fish migration to and from the ocean.

Volunteer Hours: One volunteer contributed 2.5 hours; Idaho Youth Challenge Cadets contributed 40 hours in November.

Kooskia - Kent Hills

Visitors: There were 175 visitors to the hatchery during this month; this figure is compiled by staff. Visitor numbers are dropping due to cold weather.

We can also be found on the web @

http://www.fws.gov/dworshak/

Like us on facebook and keep up with what is happening at the

Dworshak Fisheries Complex

https://www.facebook.com/pages/Dworshak-Fisheries-Complex/411264238917917#

Let's Go Outside!

Connecting People With Nature

http://www.fws.gov/letsgooutside/

Staff List

Dworshak Fisheries Complex Management:

Steve Rodgers, Dworshak Fisheries Complex Manager

Mark Drobish, Dworshak NFH Manager

Adam Izbicki (FWS) & Jeremy Sommer (NPT) Dworshak NFH Assistant Hatchery Managers

Mike Tuell, SRBA Coordinator

Dr. Marilyn "Guppy" Blair, Project Leader-Idaho Fish Health Center

Scott Koehler, Dworshak NFH Maintenance Supervisor

Vacant, Project Leader, Idaho Fishery Resource Office

Mike Faler, Aquatic Conservation Lead

Dr. William Conner, Fall Chinook Research Lead

Dr. Chris Peery, Fish Production M&E Lead

Kent Hills, Kooskia NFH Manager

Gerry Fogelman, Kooskia NFH Maintenance Supervisor

Dworshak NFH Production: Angela Feldmann, Tom Tighe, Rob Bohn, Wayne Hamilton, Mike Bisbee, Tui Moliga, Lou Ann Lasswell, Steve Coomer, Carter Lopez, Casey Mitchell, Zach Broncheau, Jayden Hudson, Steve Jeffers, Jayson Thompson

Administration: Heather Leopard- Administrative Officer , Brian Devin-Budget Technician, Randy Bowen- IT Specialist

Dworshak NFH Maintenance: Terry Weeks, Rick King, Rob Kellar, James Oatman, James Paddelty, Melissa Wright, Joe Livesay

Idaho Fish Health Center: Laura Sprague, Corie Samson, Sean Roon

Idaho Fishery Resource Office: Ray Jones, Aaron Garcia, Carrie Bretz, Frank Mullins, Jody Brostrom, Ken Bugler, John Hook

Complex Information and Education: Jill Olson

Kooskia NFH: Art Broncheau, Kenny Simpson,